UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,005	06/27/2003	Hubert K. Chow	ASCPT02D2	8320

49691 7590 12/12/2005

IP STRATEGIES
12 1/2 WALL STREET
SUITE I
ASHEVILLE, NC 28801

EXAMINER	
WYSZOMIERSKI, GEORGE P	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,005	CHOW, HUBERT K.	
	Examiner	Art Unit	
	George P. Wyszomierski	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/21/05 (Election)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *52-81 and 85-101* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *52-61,66-69,71,72,77-81 and 85-97* is/are rejected.

7)☒ Claim(s) *62-65,70,73-76,95 and 98-101* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/13/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Applicant's election without traverse of claims 52-81 and 85-101 in the reply filed on October 21, 2005 is acknowledged. As all claims to the non-elected invention have been canceled, the restriction requirement is moot.

2. Claims 65 and 94 are objected to because the dependencies of these claims are clearly incorrect. For purposes of examination, claim 65 will be treated as dependent upon claim 64, and claim 94 will be treated as dependent upon claim 93.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 85-87 are rejected under 35 U.S.C. 102(e) as being anticipated by Ghosh et al. (U.S. Patent 6,162,377).

Ghosh discloses ejecting metal droplets from a molten mass in an upward direction so that kinetic energy of the droplets will diminish prior to solidification, and cooling to solidify the droplets into spheres. Cooling takes place in a combination of gaseous and liquid "fluids" with at least one fluid emitted through a plurality of holes in a tubular structure (see Fig. 7 of Ghosh), with Ghosh column 5, lines 55-62 indicating atomized nitrogen as one specific cooling fluid. Thus, all aspects of the claimed invention are held to be fully disclosed by Ghosh et al.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 52, 57, 66, 91, 92 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh et al.

The Ghosh patent discloses a process substantially as presently claimed for producing spherical metal particles, as set forth in item no. 4 supra. Ghosh does not specify controlling the temperature of the cooling media, as required by the claims 52, 57 or 66, and does not specify a generally upward flow of gas as required by claims 91-93. However,

a) Ghosh column 5, lines 59-62 recognizes that one can provide the coolant in a gas or vapor or a mixture of gas and vapor phases in part by use of a specific temperature at the plume orifice. Thus, one of skill in the art, seeking a particular phase mixture, would be motivated to select a particular temperature that would produce the desired phase(s). Note further that Ghosh column 5, lines 11-12 discloses maintaining a constant temperature of what would be the buffering medium in Ghosh, as required by instant claim 66.

b) With respect to the upward flow of gas, Ghosh column 5, lines 33-36 indicates that the angle at which the gas strikes the molten metal can be modified, and this would include embodiments in which one selects an angle that results in a generally upward flow of gas.

Thus, a prima facie case of obviousness is established between the disclosure of Ghosh et al. and the presently claimed invention.

7. Claims 52-57, 66-68, 77-81, and 85-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. (U.S. patent 5,891,212).

Tang discloses producing metal spheres by ejecting droplets of metal from a molten mass, and cooling the droplets in a "controlled temperature solidification environment" in order to form uniformly sized and shaped spheres. The controlled environment of Tang preferably includes a mixture of gaseous and liquid media, all kept within relatively precise temperature ranges, and may include a first medium at a higher temperature disposed above a second medium at a lower temperature as set forth in claims 79 and 80; see Tang column 4, lines 28-48. This portion of Tang further indicates that the specific media set forth in claims 87-89 may be used in the prior art process.

Tang does not disclose diminishing internal kinetic energy of the droplets, as required by the instant claims. However, Tang employs a deflection means described at Tang column 4, lines 45-63, which controls deflection of the spheres as a function of, in part, the size and speed of the spheres. Performing this step of Tang in such a way as to slow the speed of the spheres would be equivalent to the presently claimed "diminishing internal kinetic energy" limitations.

Consequently, a prima facie case of obviousness is established between the disclosure of Tang and the presently claimed invention.

8. Claims 58, 60, 61, 94, 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh et al. in view of O'Brien et al. (U.S patent 4,035,116).

Claims 58, 60, 61, 69, 71, 72, 94, 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. in view of O'Brien.

The Ghosh and Tang references, discussed supra, do not disclose a method of collecting their respective metal spheres as defined in the instant claims. O'Brien, particularly

the lower right hand portion of Figure 5 therein, discloses collecting metal spheres which have cooled from droplets in a manner in accord with the instant claims. It is further noted that the O'Brien spheres are formed by a method which includes sending metal droplets in an upward trajectory so that their kinetic energy decreases prior to cooling of the droplets. Given that all of the prior art references are directed to the production of substantially spherical metal particles, it would have been considered an obvious expedient for one of ordinary skill in the art to incorporate the metal collection method of O'Brien into the processes as disclosed by Ghosh et al. or Tang et al.

9. Claims 52, 57, 58, 59, and 91-94 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,613,124. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the '124 claims and the instant claims are directed to a process of making metal spheres by producing droplets of metal from a molten mass, buffering the droplets to reduce their kinetic energy, cooling the droplets into spheres, and collecting the spheres. The steps of the respective processes are performed in the same order and for substantially the same purpose in both the '124 claims and the present invention. Thus, no patentable distinction is seen between the process as defined in the '124 claims and that of the instant claims.

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140

F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 62-65, 70, 73-76, 95, and 98-101 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. All patent application related correspondence transmitted by facsimile must be directed to the new central facsimile number, (571)-273-8300. This new Central FAX Number is the result of relocating the Central FAX server to the Office's Alexandria, Virginia campus.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GEORGE WYSZOMIERSKI
PRIMARY EXAMINER
GROUP 1700

GPW
December 7, 2005